



# Stem Cell Solutions

## Complete Cell Culturing Solutions for MSC, iPSC, and ESC

As one of the earliest licensees of the iPS Academia Japan, Inc. induced pluripotent stem cell (iPSC) patent portfolio, ATCC brings to the research community complete cell culturing solutions for iPSCs. Each lot of cells is performance tested for viability, pluripotency, differentiation capacity, karyotype, growth potential, and sample purity. All ATCC® iPSCs are pre-adapted to an optimized serum-free, feeder-free cell culture environment and licensed for research use.

## Complete Cell Culturing Solutions for Human Mesenchymal Stem Cells (MSCs)

Applications: Adult stem cell differentiation, regenerative medicine, cell therapy, tissue engineering, creation of iPSCs.

TABLE 1. Human MSCs

ATCC® No.	Name	Organism	Source	Growth Properties	Age	Ethnicity/Gender	Passage number
PCS-500-010	Umbilical Cord-derived MSCs; Normal, Human	Homo sapiens (human)	Umbilical cord matrix (Wharton's Jelly)	Adherent	Neonatal	Lot Specific	2
PCS-500-011	Adipose-derived MSCs; Normal, Human	Homo sapiens (human)	Lipoaspirate	Adherent	Adult	Lot Specific	2
PCS-500-012	Bone Marrow-derived MSCs; Normal, Human	Homo sapiens (human)	Bone marrow	Adherent	Adult	Lot Specific	2
SCRC-4000™	ASC52telo, hTERT Immortalized Adipose-derived MSCs	Homo sapiens (human)	Adipose-derived	Adherent	Adult	Caucasian/Female	2

## Human MSC Culture Systems and Reagents

MSC Basal Medium, when supplemented with one of the MSC Growth Kits, provides an ideal cell system to propagate MSCs. When maintained under optimal growth conditions, ATCC Normal Human MSCs have been shown to be multipotent, capable of differentiating down the adipogenic, osteogenic, and chondrogenic lineages.

ATCC® No.	Name	Description
PCS-500-030	MSC Basal Medium for Adipose-, Umbilical -, and Bone Marrow-derived MSCs	Designed to support MSCs derived from human lipoaspirates, bone marrow, and umbilical cord. MSC Basal Medium must be supplemented with the appropriate cell-specific growth kit. No feeder layers or extracellular matrix required.
PCS-500-040	MSC Growth Kit for Adipose- and Umbilical-derived MSCs - Low Serum	Contains components that, when added to MSC Basal Medium, create a complete cell culture environment for human MSCs isolated from normal human adipose and umbilical tissue.
PCS-500-041	MSC Growth Kit for Bone Marrow-derived MSCs	Contains components that, when added to MSC Basal Medium for Adipose-, Umbilical-, and Bone Marrow-derived MSCs, create a complete cell culture environment for MSCs isolated from human bone marrow.
PCS-500-050	Adipocyte Differentiation Toolkit for Adipose-derived MSCs and Preadipocytes	Contains medium and reagents designed to induce adipogenesis in Adipose-derived MSCs and preadipocytes with high efficiency; supports maturation of derived adipocytes during lipid accumulation.
PCS-500-051	Chondrocyte Differentiation Tool	Complete differentiation medium designed to induce chondrogenesis in actively proliferating Adipose-derived MSCs with high efficiency.
PCS-500-052	Osteocyte Differentiation Tool	Complete differentiation medium designed to induce osteogenesis in actively proliferating Adipose-derived MSCs with high efficiency.

## Pluripotent Stem Cell Qualified Feeder Layer Cells and Reagents

Feeder cell lines, including antibiotic-resistant lines, are validated on multiple stem cell lines for safe and robust stem cell culture. In addition to a wide selection of standard feeder cell lines, mitotically inactivated feeder cell lines are available for your convenience.

ATCC® No.	Name	Description
CRL-2581™	C166	Mouse embryonic endothelial cell
CRL-2582™	C166-GFP	Mouse embryonic endothelial cell with GFP expression
CRL-2749™	OP9	Mouse embryonic bone marrow stromal cells
SCRC-1007™	AFT024	Mouse embryonic liver fibroblast
SCRC-1007.1™	AFT024 IRR	Irradiated mouse embryonic liver fibroblast
SCRC-1008™	MEF (C57BL/6)[MEF-BL/6-1]	Mouse embryonic fibroblast
SCRC-1008.1™	MEF (C57BL/6) IRR	Irradiated mouse embryonic fibroblast
SCRC-1040™	MEF (CF-1)	Mouse embryonic fibroblast
SCRC-1040.1™	MEF (CF-1)IRR	Irradiated mouse embryonic fibroblast
SCRC-1040.2a™	MEF (CF-1) MITC	Mitomycin C treated mouse embryonic fibroblast
SCRC-1045™	MEF (DR4)	Multi-drug resistant mouse fibroblast
SCRC-1041™	HFF-1	Human foreskin fibroblast
SCRC-1041.1™	HFF-1 IRR	Irradiated human foreskin fibroblast
PCS-201-011	Dermal Fibroblasts; Normal, Human	Mitomycin C treated neonatal human fibroblast
SCRC-1049™	SNL76/7	Mouse STO fibroblast with G418 resistance and endogenous expression of LIF
SCRC-1050™	SNL76/7-4	Mouse STO fibroblast with resistance to G418 and puromycin plus endogenous expression of LIF

## Differentiated Induced Pluripotent Stem Cells

ATCC® iPSC-derived cells are able to be terminally differentiated into your desired cell type. Donor variability is eliminated, making them ideal for physiologically relevant cell-based assay development

ATCC® No.	Name	Reprogramming Method	Tissue of Origin	Disease	Ethnicity	Gender
ACS-7010™	iPSC-derived Mesenchymal Stem Cells; BYS0112	Sendai viral	Bone marrow CD34+	Normal	Caucasian	Male
ACS-7020™	iPSC-derived CD34+ Cells, BXS0117	Sendai viral	Bone marrow CD34+	Normal	Asian	Female
ACS-7030™	iPSC-derived Monocytes; DYS0100	Sendai viral	Foreskin	Normal	Unknown	Male

## Human iPSCs

High viability, low passage iPSCs are pre-adapted to serum-free, xeno-free, and feeder-free culture conditions.

ATCC® No.	Designation	Reprogramming Method	Tissue of Origin	Disease	Ethnicity	Gender
ACS-1003™	ATCC-DYP0730	Episomal	Foreskin	Down syndrome	Caucasian	Male
ACS-1004™	ATCC-DYP0250	Episomal	Dermal fibroblast	Cystic fibrosis; homozygous for the Delta 508 mutation in the CFTR gene	Unknown	Male
ACS-1007™	ATCC-HYR0103	Retroviral	Liver	Normal	Hispanic	Male
ACS-1011™	ATCC-DYR0100	Retroviral	Foreskin	Normal	Unknown	Male
ACS-1012™	ATCC-DYR0530	Retroviral	Skin Dermal fibroblast	Parkinson's disease, asthma, depression	Caucasian	Male
ACS-1013™	ATCC-DYS0530	Sendai viral	Skin Dermal fibroblast	Parkinson's disease, asthma, depression	Caucasian	Male
ACS-1014™	ATCC-DYP0530	Episomal	Skin Dermal fibroblast	Parkinson's disease, asthma, depression	Caucasian	Male
ACS-1019™	ATCC-DYS0100	Sendai viral	Foreskin	Normal	Unknown	Male
ACS-1020™	ATCC-HYS0103	Sendai viral	Liver	Normal	Hispanic	Male
ACS-1021™	ATCC-CYS0105	Sendai viral	Heart	Normal	Unknown	Male
ACS-1023™	KYOU-DXR0109B	Retroviral	Dermal fibroblast	Normal	Caucasian	Female
ACS-1024™	ATCC-BYS0110	Sendai viral	Bone marrow CD34+	Normal	African American	Male
ACS-1025™	ATCC-BYS0111	Sendai viral	Bone marrow CD34+	Normal	Hispanic	Male
ACS-1026™	ATCC-BYS0112	Sendai viral	Bone marrow CD34+	Normal	Non-Hispanic White	Male
ACS-1027™	ATCC-BYS0113	Sendai viral	Bone marrow CD34+	Normal	Asian	Male
ACS-1028™	ATCC-BXS0114	Sendai viral	Bone marrow CD34+	Normal	African American	Female
ACS-1029™	ATCC-BXS0115	Sendai viral	Bone marrow CD34+	Normal	Hispanic	Female

ATCC® No.	Designation	Reprogramming Method	Tissue of Origin	Disease	Ethnicity	Gender
ACS-1030™	ATCC-BXS0116	Sendai viral	Bone marrow CD34+	Normal	Non-Hispanic White	Female
ACS-1031™	ATCC-BXS0117	Sendai viral	Bone marrow CD34+	Normal	Asian	Female

Cells are tested for post-freeze viability, growth, sterility (including mycoplasma), identity by STR analysis, and karyotype by G-banding. Each lot is tested for pluripotency using flow cytometry to analyze the expression of the pluripotent markers Nanog, SSEA4, Tra-1-60, and Tra-1-81. Differentiation potential is tested by embryoid body (EB) formation and subsequent analysis for the three germ layers by qRT-PCR. The number of colonies per vial is >30 colonies after 5 days when seeded as directed.

## Embryonic Stem Cells (ESCs)

Human ESCs from ATCC are eligible for federal funding.

ATCC® No.	Name	Source	Cytogenetic Analysis	Age	Applications
SCRC-2002™	hESC BG01V	BG01V was derived from the wild-type, parental hESC line BG01 [PMID 12968106, PMID 15153607]	49, XXY, +12, +17	Embryo, blastocyst	Use as a control line to study the development of disease and differentiation

ATCC supports all of the cell culture systems used for the growth and expansion of undifferentiated iPSCs and ESCs; all the reagents needed are available in our offering.

## Human Cancer Stem Cells

ATCC® No.	Name	Description
ACS-1018™	BT142 mut/-	Isolated from an Oligoastrocytoma Grade III. BT142 mut/- grow as neurospheres in suspension. Point mutations in isocitrate dehydrogenase I (IDH1) and IDH2 are found in majority of grade II and III gliomas. R132H is the most common IDH1 substitution found in gliomas. BT142 mut/- contains a homozygous IDH1 R132H mutation, which originated from a heterozygous IDH1 R132H BT142 cells.

## Complete Cell Culturing Solutions for Mouse Embryonic Stem Cells (mESCs)

ATCC has many of the most influential and widely cited mouse mESCs lines.

ATCC® No.	Name	Description
CRL-1934™	ES-D3(D3)	Derived from strain 129S2/SvPas mouse blastocyst
SCRC-1002™	ES-C57BL/6	Derived from strain C57BL/6j (B6) mouse blastocyst
SCRC-1010™	J1	Derived from a male agouti 129S4/Svjae embryo; useful in studies on embryonic development and Cre-Lox recombination
SCRC-1011™	R1	Established from a 3.5 day blastocyst produced by crossing two 129 mouse sub strains (129S1/SvImj and 129X1/Svj)
SCRC-1016™	ESF 158	Developed from (NOD×129) F1 × 129 backcross 1 mice, intercrossed to select for homozygous regions containing disease loci; useful for genetic targeting of the non-obese diabetic (NOD) mouse genome
SCRC-1018™	RW.4	Derived from a strain 129X1/Svj mouse blastocyst; useful for gene knock-out/knock-in and studies related to differentiation and ESC proliferation
SCRC-1019™	B6/BLU	Derived from a C57BL/6 transgenic line containing a LacZ reporter; the transgene is a beta-globin LacZ fusion
SCRC-1020™	SCC#10	Derived from a strain 129Sv/J (129X1Sv/J) mouse blastocyst; useful for gene knock-out/knock-in
SCRC-1021™	EDJ#22	Derived from 129SvEV mice from Taconic; useful in gene targeting experiments
SCRC-1023™	AB2.2	Originated from a Steel sub strain of 129 mice (129/SvEvBrd-Hprt <sup>b</sup> -m2); useful in recombineering with a unique, fully end-sequenced, 129Sv BAC library generated from AB2.2 ESC DNA
SCRC-1033™	7AC5/EYFP	A yellow fluorescent variant of R1 ESC (129S1/SvImj and 129X1/Svj) generated by the random integration of EYFP using co-electroporation with a circular selectable marker containing vector pPGK-Puro
SCRC-1036™	R1/E	Subcloned from R1 ESC (129S1/SvImj and 129X1/Svj)
SCRC-1037™	G-Olig2	Strain 129X1/Svj ESC line designed by the insertion of green fluorescent protein (GFP) into the gene for Olig2; the insertion permits visualization and physical separation of a subset of living ESC-derived neural cells
SCRC-1038™	CE-1	Derived from the D3 ES line; CE1 (for Cassette Exchange) contains one 'acceptor' module that allows for efficient double lox targeting (the cells are hygromycin resistant)
SCRC-1039™	CE3	Derived from D3 ESC line; CE3 (for Cassette Exchange) contains one 'acceptor' module that allows for efficient double lox targeting with constitutive GFP expression (the cells are puromycin resistant)

## mESC Culture Systems and Reagents

ATCC mESC culture systems and reagents are performance validated and formulated to meet the exacting specifications that mESCs require for rapid proliferation, good morphology, and maintenance of pluripotency. We have a full complement of media, sera, cell culture reagents, and the most extensive offering of feeder layer cell lines available.

ATCC® No.	Name	Description
SCRR-2011	mESC Basal Medium	Optimized to support the undifferentiated self-renewal cycle related to mouse embryonic stem cell growth. Contains a stable glutamine dipeptide, may be supplemented by addition of ESC Qualified Fetal Bovine Serum
SCRR-30-2020	Fetal Bovine Serum ESC qualified	This serum is tested for ability to support embryonic stem culture and differentiation. Plating efficiency, colony morphology, and the expression of at least five markers of differentiation are determined for undifferentiated cells and cells induced to EB formation through full differentiation.

## Starter Kit for iPSC Culture

Just getting started? ATCC provides a pre-configured kit that makes it easy and cost effective to get started with human pluripotent stem cell culture.

ATCC® No.	Name	Description
ACS-3044-K™	Feeder-free, Serum-free Culture System	This kit supplies CellMatrix™ Basement Membrane Gel and cell culture components to support a serum-free, feeder-free cell culture environment, including Pluripotent Stem Cell SFM XF/FF, Stem Cell Dissociation Reagent, ROCK Inhibitor Y27632, Stem Cell Freezing Media, DMEM: F12 Medium, and D-PBS.

### Serum-free, Feeder-free Cell Culture System, Individual Reagents

30-2200	D-PBS	D-PBS without calcium chloride or magnesium chloride.
ACS-3002	Pluripotent Stem Cell SFM XF/FF	A defined, xeno-free, serum-free medium optimized for feeder-free culture of human pluripotent stem cells.
ACS-3010	Stem Cell Dissociation Reagent	A neutral protease isolated from <i>Bacillus polymyxa</i> that promotes safe and efficient detachment of human pluripotent stem cells during subcultivation in cell culture.
ACS-3030	ROCK Inhibitor Y27632	ROCK Inhibitor prevents dissociation-induced apoptosis of human pluripotent stem cells, increasing the survival rate and maintaining pluripotency during subcultivation and thawing as well as enhancing the survival rate of stem cells during cryopreservation.
ACS-3035	CellMatrix Basement Membrane Gel	A soluble, growth factor reduced basement membrane extract that supplies a feeder-free surface for the attachment of human pluripotent stem cells.

### Serum-free, Feeder-free Cell Culture System, Individual Reagents

30-2200	D-PBS	D-PBS without calcium chloride or magnesium chloride.
ACS-3002	Pluripotent Stem Cell SFM XF/FF	A defined, xeno-free, serum-free medium optimized for feeder-free culture of human pluripotent stem cells.
ACS-3010	Stem Cell Dissociation Reagent	A neutral protease isolated from <i>Bacillus polymyxa</i> that promotes safe and efficient detachment of human pluripotent stem cells during subcultivation in cell culture.
ACS-3030	ROCK Inhibitor Y27632	ROCK Inhibitor prevents dissociation-induced apoptosis of human pluripotent stem cells, increasing the survival rate and maintaining pluripotency during subcultivation and thawing as well as enhancing the survival rate of stem cells during cryopreservation.
SCRC-1040.1™	MEF (CF-1) IRR	Irradiated mouse embryonic fibroblast
SCRC-1041.1™	HFF-1 IRR	Irradiated human fibroblast

### Feeder-dependent with Serum Cell Culture System, Individual Reagents

30-2006	DMEM: F12 Medium	1:1 mix of Dulbecco's Modified Eagle's Medium and Ham's F-12 Medium. Modified to contain 2.5 mM L-glutamine, 15 mM HEPES, 0.5 mM sodium pyruvate, and 1200 mg/L sodium bicarbonate.
30-2200	D-PBS	D-PBS without calcium chloride or magnesium chloride.
ACS-3010	Stem Cell Dissociation Reagent	A neutral protease isolated from <i>Bacillus polymyxa</i> that promotes safe and efficient detachment of human pluripotent stem cells during subcultivation in cell culture.
ACS-3030	ROCK Inhibitor Y27632	ROCK Inhibitor prevents dissociation-induced apoptosis of human pluripotent stem cells increasing the survival rate and maintaining pluripotency during subcultivation and thawing as well as enhancing the survival rate of stem cells during cryopreservation.
SCRR-30-2020	ES-qualified FBS	This serum is tested for ability to support embryonic stem culture and differentiation. Plating efficiency, colony morphology, and the expression of at least five markers of differentiation are determined for undifferentiated cells and cells induced to EB formation through full differentiation.
SCRC-1040.1	MEF (CF-1) IRR	Irradiated mouse embryonic fibroblast
SCRC-1041.1	HFF-1 IRR	Irradiated human fibroblast

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